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Coleophora cratipennella Clemens, 1864 and *C. tamesis* Waters, 1929, two distinct species (Lepidoptera, Coleophoridae)

Giorgio Baldizzone[1]* & Jean-François Landry**

* via Manzoni, 24, I-14100 Asti, Italy.
** Agriculture Canada, Centre for Land and Biological Resources Research, Central Experimental Farm, Ottawa, Ontario K1A 0C6, Canada.

Summary

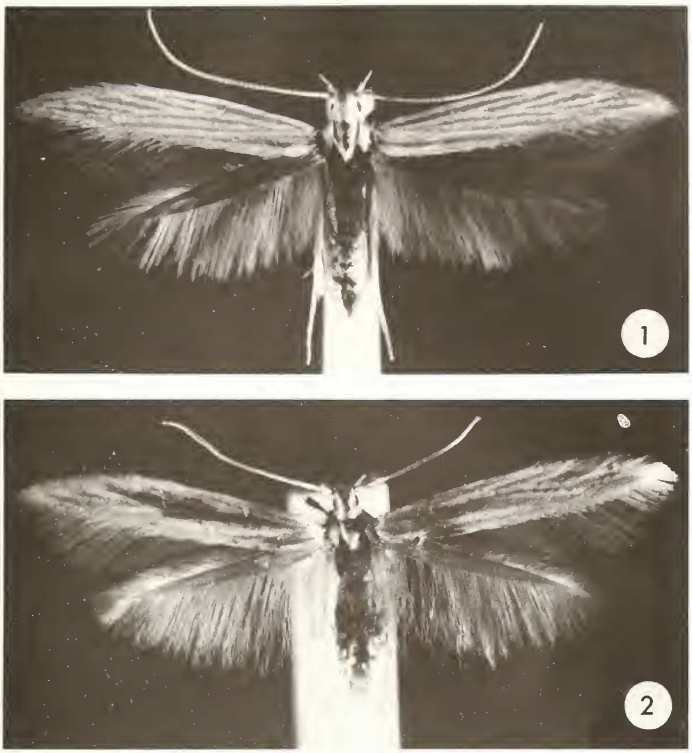
The status of the European *Coleophora tamesis* Waters, 1929, previously regarded as a junior synonym of the North American *C. cratipennella* Clemens, 1864, is revised. The two are structurally distinct species. Differences in male and female genitalia and in larval cases of the two species are presented.

Résumé

Le statut de *Coleophora tamesis* Waters, 1929, une espèce européenne auparavant considérée comme un synonyme récent de l'espèce nord-américaine *C. cratipennella* Clemens, 1864, est ici révisé. Les deux sont des espèces morphologiquement distinctes. Les différences dans les génitalia mâles et femelles et dans les fourreaux larvaires des deux espèces sont indiquées.

In the most recent checklist of Lepidoptera of North America, Wright (1983:17) synonymised *Coleophora tamesis* Waters, 1929 with *C. cratipennella* Clemens, 1864. This synonymy was followed by Bradley and Fletcher (1986 : 14), Emmet (1987 : 42 ; 1988 : 100), and Vives Moreno (1988 : 68). However, our recent examination of the type material of the two nominal species involved and study of additional non-type material has revealed several significant differences between these species. Although the adult moths of the two species are externally very similar (Figs 1-2), they have a number of differences in both male and female genitalia and in larval case construction. Additionally *C. tamesis* is found only in Europe whereas *C. cratipennella* is known to occur only in North America. We hereby revise the status of *C. tamesis* Waters and regard it as specifically distinct from *C. cratipennella.* We also evaluated the other two synonyms of *C. cratipennella* and found their status correct.

[1] LXXIII[rd] contribution to the knowledge of Coleophoridae



Figs 1, 2. Imagos of *Coleophora* spp. 1. *C. cratipennella* Clemens, Allegan State Game Area, Allegan Co., Michigan, USA, 2.vii.1992, leg. J. F. Landry ; Canadian National Collection ; 2. *C. tamesis* Waters : imago ; Ostfries. Inseln, Wangeroog, [Germany], ex l. *Juncus gerardi*, 18.ix.1964, leg. E. Jäckh ; coll. Baldizzone.

The nomenclature of the two species is therefore as follows :

Coleophora cratipennella Clemens, 1864 : 506.

= *Coleophora gigantella* Chambers, 1874 : 128 ; synonymised by Busck 1903 : 219.

= *Coleophora shaleriella* Chambers, 1875 : 116 ; synonymised by Wright, 1983 : 17.

Coleophora tamesis Waters, 1929 : 1 ; **status revised.**

= *Coleophora thamesis* sensu Pierce and Metcalfe, 1935 : 65 ; invalid emendation. Waters (1929 : 1) stated that the species was named after the Thames River, but the specific epithet is consistently spelled "*tamesis*" in the paper, so we conclude that it was not an original spelling error.

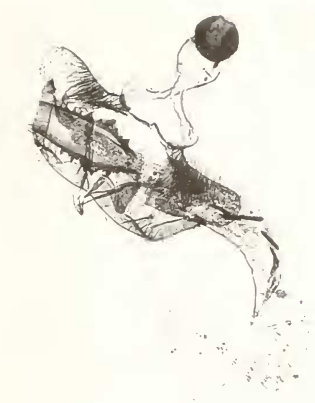
Toll (1953) included *C. tamesis* in section 1 of his group 30. This section was characterised mostly by the forewing colour pattern (bright yellow or bright grey with indistinct whitish lines) and the lanceolate papillae anales. The group comprises several species feeding on *Juncus* (Juncaceae) seeds. *Coleophora cratipennella* and *C. tamesis* are distinguished from other members of Toll's group 30, section 1 by the phallotheca rods bearing a dorsal row of large teeth. Teeth are also present in other species of the group but are clustered near the apex of the rods.

Differences between *C. cratipennella* and *C. tamesis*

♂ GENITALIA : in *C. tamesis*, the tegumen is markedly constricted in the middle (Fig. 3), the valva is broadly rounded, the apex of the sacculus is tapered into a blunt tooth, the rods of the phallotheca bear several large, acute teeth interspersed with very small teeth (Fig. 9), and there are few, scattered, large cornuti (Fig. 11) ; in *C. cratipennella*, the tegumen is broader, shorter and shallowly constricted in the middle (Fig. 4), the valva is somewhat narrower, the apex of the sacculus is rounded or subtruncate, the rods of the phallotheca are broader with only 3-4 nearly blunt, saw-like, subequal teeth (Fig. 10), and the cornuti are numerous and arranged in two more or less distinct groups (an anterior group of tightly clustered, larger cornuti, and a posterior group of loosely scattered smaller cornuti) (Fig. 12).

♀ GENITALIA : in *C. tamesis* (Figs 7, 13), the sterigma is subquadrate, the posterior margin of tergum 8 is straight and inconspicuous, the ostium bursae is transversely V-shaped, the median band of the ductus bursae is thin at the colliculum, and a signum is present ; in *C. cratipennella* (Figs 8, 14), the sterigma is more narrowly transverse with the ostium bursae situated closer to the hind margin of the sterigma, the posterior margin of tergum 8 is linguiform and protruded beyond the level of the sterigma, the ostium bursae is more narrowly V-shaped, the median band of the ductus bursae is wider at the colliculum, a signum is absent, and the apophyses are proportionally shorter.

There are also slight differences in the abdominal support structures of terga 1-2, the transverse margins being thicker and more defined in *C. cratipennella* (Fig. 6) than in *C. tamesis* (Fig. 5).



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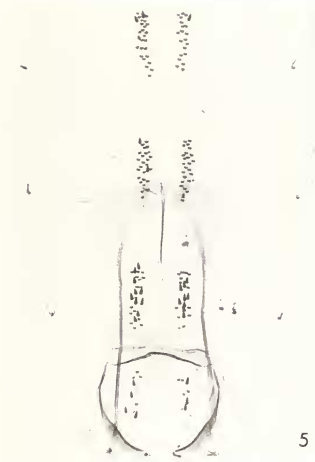

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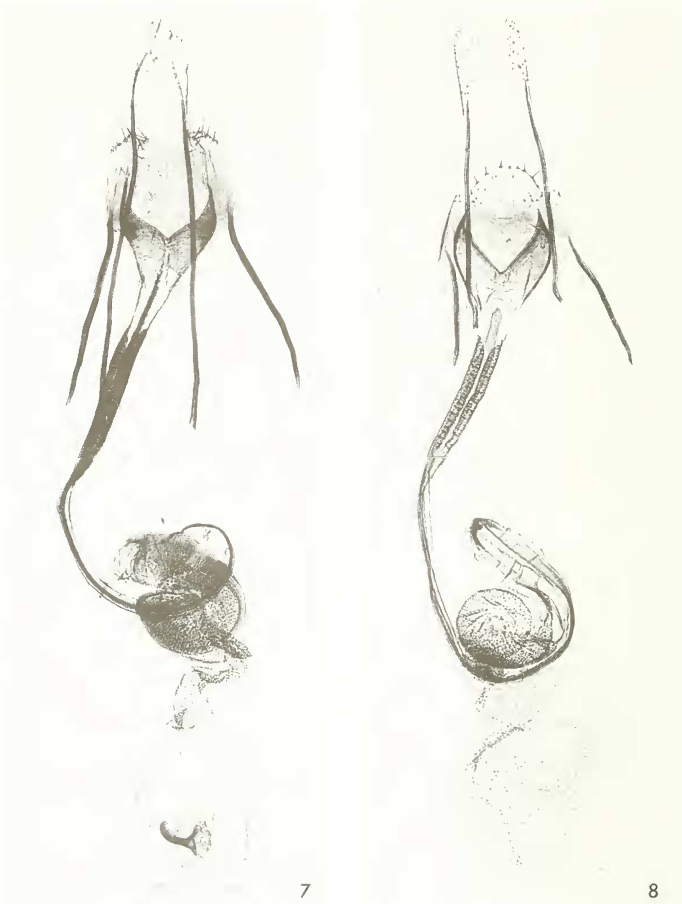
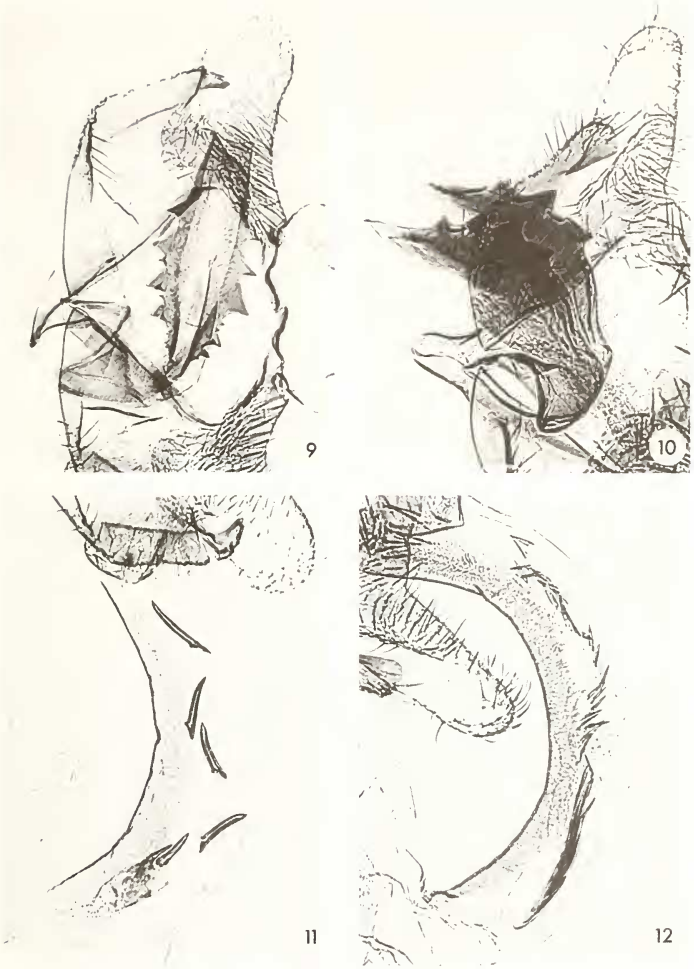
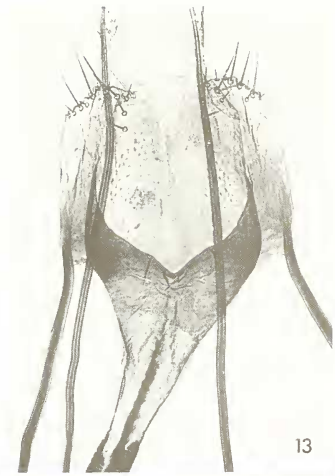
Figs 3-6. Male genitalia of *Coleophora* spp. 33. *C. tamesis* Waters, holotype (slide Bldz 9618) ; Binsey, Oxfordshire, England, 16.vi.1925 ; coll. Oxford Museum ; 4. *C. cratipennella* Clemens (slide Bldz 8924) ; White Point Beach, Queens Co., Nova Scotia, Canada, 2.v.1954, ex l. *Juncus gerardi*, leg. J. McDunnough ; coll. Baldizzone ; 5. *C. tamesis*, abdomen, same data as Fig. 3 ; 6. *C. cratipennella*, abdomen, same data as Fig. 4.

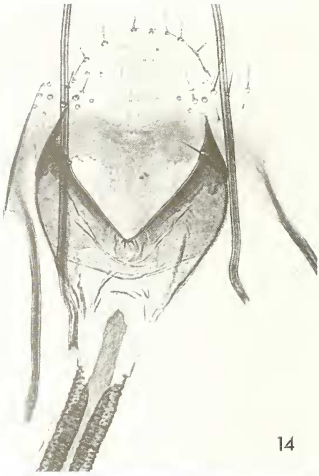


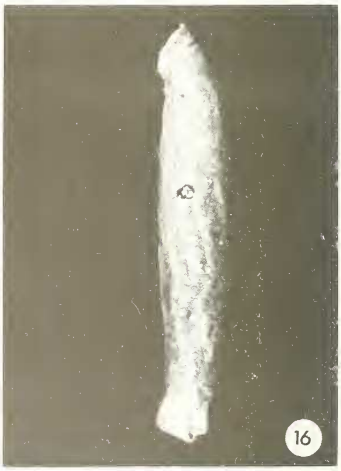
Figs 7-8. Female genitalia of *Coleophora* spp. 7. *C. tamesis* Waters, paratype (slide Bldz 9619) ; Binsey, Oxfordshire, England, 10.vi.1925 ; coll. Oxford Museum ; 8. *C. cratipennella* Clemens (slide Bldz 10626) ; Baddeck, Nova Scotia, Canada, 4.vi.1936, T. N. Freeman ; coll. Baldizzone.



Figs 9-12. Male genitalia of *Coleophora* spp. 9. *C. tamesis* Waters : male valva and phallotheca at higher magnification (genitalia slide Bldz 5909) ; Hungary, Zamárdi parti rétek, 5-10.ix.1953, leg. Kaszab ; coll. Baldizzone ; 10. *C. cratipennella* Clemens : idem (genitalia slide Bldz 8924) ; same data as Fig. 3 ; 11. *C. tamesis* Waters : cornuti (genitalia slide Bldz 5909) ; same data as Fig. 7 ; 12. *C. cratipennella* Clemens : cornuti (genitalia slide Bldz 10625) ; Dalvay House, Canadian [Cavendish] National Park, Prince Edward Island, Canada, ex larva *Juncus*, 18.vi.1946, leg. McDunnough ; coll. Baldizzone.







Figs 13-14. Distal portion of female genitalia at higher magnification. 13. *C. tamesis* Waters (genitalia slide Bldz 9619) ; same data as Fig. 5 ; 14. *C. cratipennella* Clemens (genitalia slide Bldz 10626) ; same data as Fig. 6.
Figs 15-16. Larval cases. 15. *C. tamesis* Waters (length 5.5 mm) ; Ostfries. Inseln, Wangeroog, [Germany], ex larva *Juncus gerardi*, 18.ix.1964, leg. E. Jäckh ; coll. Baldizzone ; 16. *C. cratipennella* Clemens (length 9 mm) ; Washtenaw Co., Michigan, U.S.A., on *Juncus dudleyi* ; coll. Baldizzone.

Larval cases : in *C. tamesis* (Fig. 15), the case of a mature larva is comparatively shorter, incorporates a seed pericarp, and has a mouth angle of nearly 0 degrees (the case lies parallel to the substrate) ; in *C. cratipennella* (Fig. 16), the case is longer and more slender, made of pure silk without seed pericarp, and has a mouth angle of about 40 degrees (the case juts out at an angle from the substrate).

Food plant and habitat : Larvae of both species feed on the seeds of various species of *Juncus*. Both species occur in marshes, including salt marshes.

Geographical distribution : *Coleophora cratipennella* is known only from North America where it is widely distributed in the East, from the Maritimes Provinces of Canada, west to Ontario and Michigan, and south to Mississippi and Louisiana.

C. tamesis is known from Europe where it ranges across the northern and central regions (Great Britain, Sweden, Finland, Spain, Italy, Belgium, Holland, Germany, Austria, Poland, Hungary, Bulgaria, the former Yugoslavia, Greece, Russia), and the Caucasus Mountains ; there are new records from Turkey, Jordan, and Afghanistan (Baldizzone, in press).

Type material examined

***Coleophora cratipennella* Clemens**

Holotype ♀, in Academy of Natural Sciences of Philadelphia, labelled :

[1] "Va." [Virginia] [printed]
[2] "TYPE/ Coleophora/ cratipennella/ B. Clemens/ 7385" [red, partly printed, partly handwritten, number written across right side]
[3] "Type! Coleophora/ cratipennella/ Clemens/ AB 1902." [handwritten]
[4] "SLIDE/ BW 143 ♀/ No." [pale blue, partly printed, partly handwritten]

Condition of specimen : double-mounted on a cork block ; right wings and left hindwing, right antenna and half of left antenna, tarsi of right front and middle legs and all other legs missing ; genitalia slide BW 143.

Coleophora shaleriella Chambers

HOLOTYPE ♀, in Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts, labelled :

[1] "Type/ 1597" [red with upper portion with the word "Type" white, number handwritten]
[2] "Kentucky./ Chambers." [printed]
[3] "HOLOTYPE/ Coleophora/ shaleriella Ch./ B. Wright" [red, partly printed, partly handwritten]
[4] "Coleophora shalerii" [label folded in two, with a torn piece missing ; handwritten]
[5] "SLIDE/ BW 187 ♀/ No." [pale blue, partly printed, partly handwritten]

Condition of specimen : pinned sideways, wings unspread ; recently double-mounted on a polyporous block ; antennae, left labial palp, left forewing missing ; somewhat covered with mould ; genitalia slide BW 187.

Braun (1914 : 165) misidentified as *shaleriella* Chambers specimens of a species (as yet undetermined) whose larvae fed on the seeds of *Polygonum punctatum* Ell (Polygonaceae) and have very different cases.

Coleophora gigantella Chambers

HOLOTYPE [sex undetermined], in United States National Museum, Washington D.C., labelled :

[1] "170".
[2] "Type/ No. 5778/ U.S.N.M.".
[3] "Coleophora/ gigantella/ Chambers".

Condition of specimen : set on a regular pin, right wings damaged, abdomen missing, specimen covered with mould, in poor condition. The maculation, however, is good and leaves no doubt that the nominal species is synonymous with *cratipennella.*

Coleophora tamesis Waters

HOLOTYPE ♂, in Oxford Museum, Oxford, England, labelled :

[1] "Binsey/ 16.6.25" [Oxforshire, England] [in Waters' hand].
[2] "Coleophora tamesis Waters/ *Type* / see Ent. mo. Mag. 1929, p. 1."
[3] "Bldz/ PG no/ 9618" [yellow, handwritten].

Condition of specimen : good ; genitalia slide Bldz 9618.

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References

Baldizzone, G., In press. Contribuzioni alla conoscenza dei Coleophoridae. LXXV. Coleophoridae dell'area Irano-Anatolica e regioni limitrofe. *Rivista Piemontese di Storia Naturale.*

Bradley, J. D. & Fletcher, D. S., 1986. An indexed list of British butterflies and moths. Kedleston Press, London. vi + 122 pp.

Braun, A. F., 1914. Notes on *Coleophora*, with descriptions of two new species (Microlepidoptera). *Journal of the Cincinnati Society of Natural History* 21 : 157-167.

Busck, A., 1903. Notes of Brackenridge Clemens' types of Tineina. *Proceedings of the Entomological Society of Washington* 5 : 181-220.

Chambers, V. T., 1874. Micro-Lepidoptera. *The Canadian Entomologist* 6 : 128-130.

Chambers, V. T., 1875. Tineina of the Central United States. *Cincinnati Quarterly Journal of Science* 2 : 97-121.

Clemens, B., 1864. North American Micro-Lepidoptera. *Proceedings of the Entomological Society of Philadelphia* 3 : 505-520.

Emmet, A. M., 1987. Addenda and corrigenda to the British list of Lepidoptera. *Entomologist's Gazette* 38 : 31-52.

Emmet, A. M. (Ed.), 1988. A Field Guide to the Smaller British Lepidoptera. Second edition. British Entomological and Natural History Society, London. 288 pp.

Pierce, F. N. & Metcalfe, J. W., 1935. The genitalia of the Tineid families of the Lepidoptera of the British Island. Oundle, Northants. xxii + 116 pp., 68 pls.

Toll, S. G., 1953. Rodzina Eupistidae polski. *Materialy do Fizjografii Kraju* 32 : 1-292, 38 pls.

Vives Moreno, A., 1988. Catalogo mundial sistematico y de distribucion de la familia Coleophoridae Hübner, [1825] (Insecta : Lepidoptera). *Boletin de Sanidad Vegetal*, Fuera de Serie 12. 196 pp.

Waters, E. G. R., 1929. A new *Coleophora* of the rush-feeding group. *The Entomologist's monthly Magazine* 65 : 1-3.

Wright, B., 1983. Coleophorinae, pp. 15-17. *In* Hodges, R. W. *et al.* (Eds) : Check List of the Lepidoptera of American North of Mexico. E.W. Classey and The Wedge Entomological Research Foundation, London. xxiv + 284 pp.